

Orthodontic Examination and Diagnosis-II



Orthodontic Examination and Diagnosis-I

- Definitions:

- I. History:

Personal history:

Chief Complain:

Past History:

Past medical history:

Past dental history:

II. Clinical examination:

General Examination:

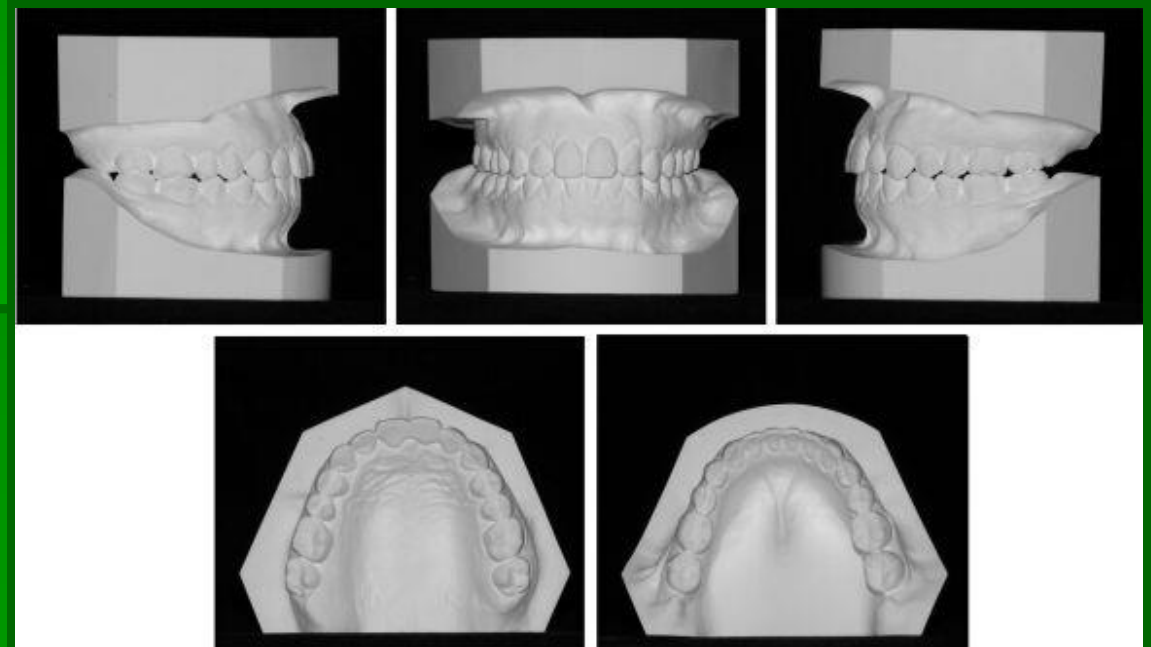
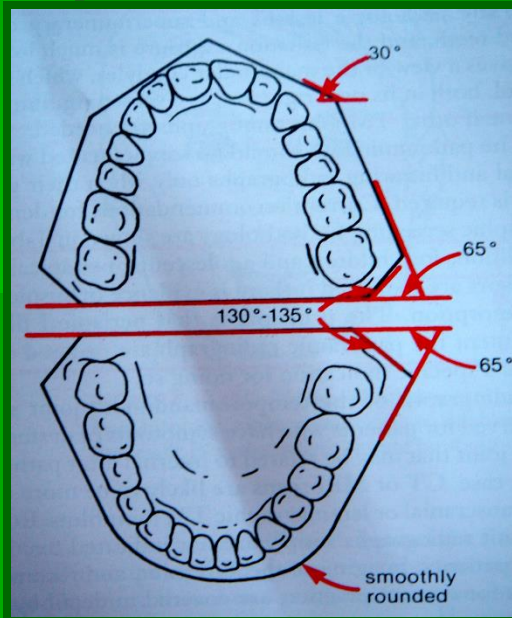
Extra-Oral Examination:

Intra-Oral Examination:

III. Study Casts

Their value in orthodontic diagnosis includes:

- i. They make it possible to view occlusion from every aspect & make direct measurement.

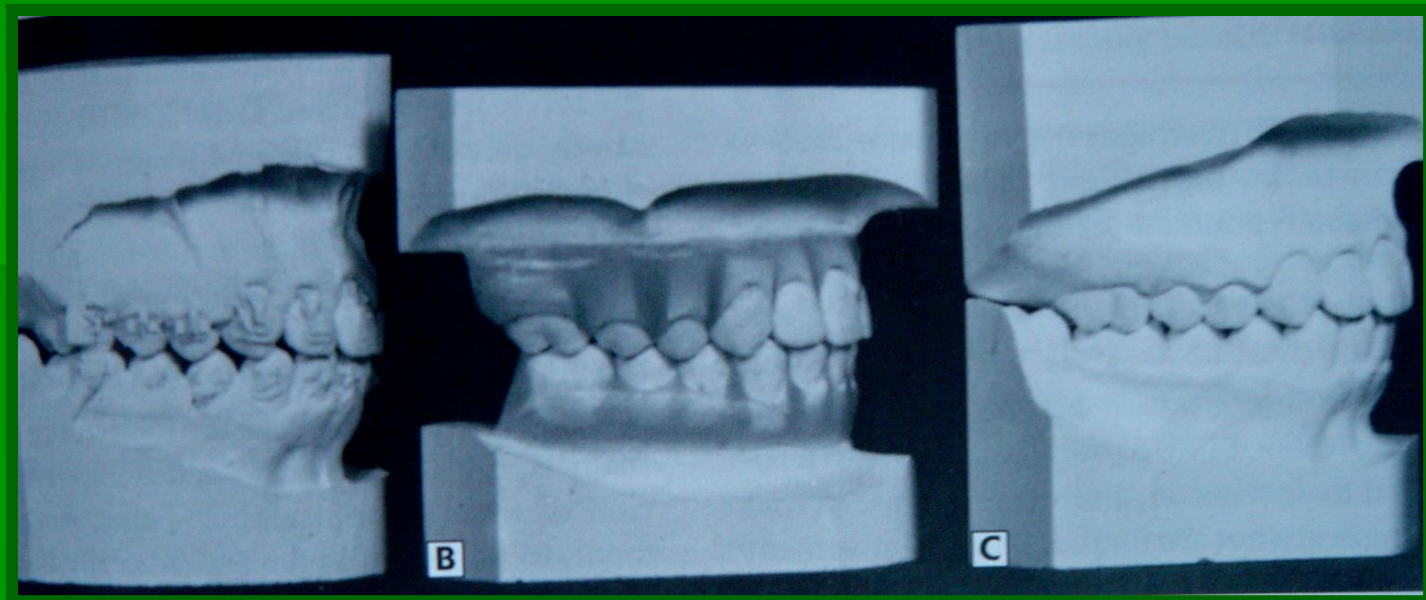


III. Study Casts

- ii. They are helpful in explaining treatment plan to patient and parents
- iii. They may be used for assessment of treatment progress

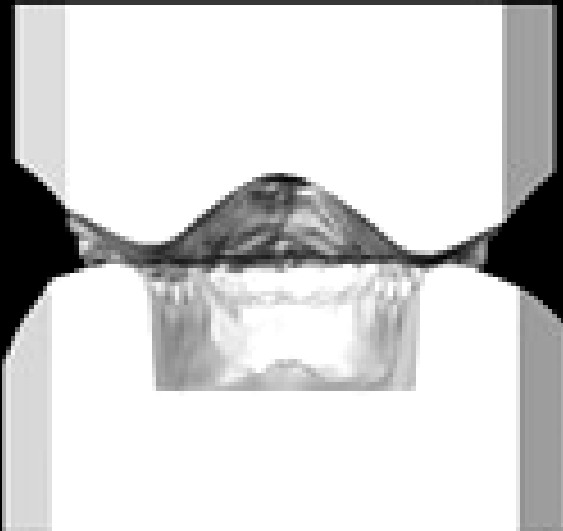
III. Study Casts

- iv. They can be used for construction of diagnostic setup for simulation of proposed treatment plan
- v. They can be used for consultation with another Orthodontist to whom patient may be transferred.



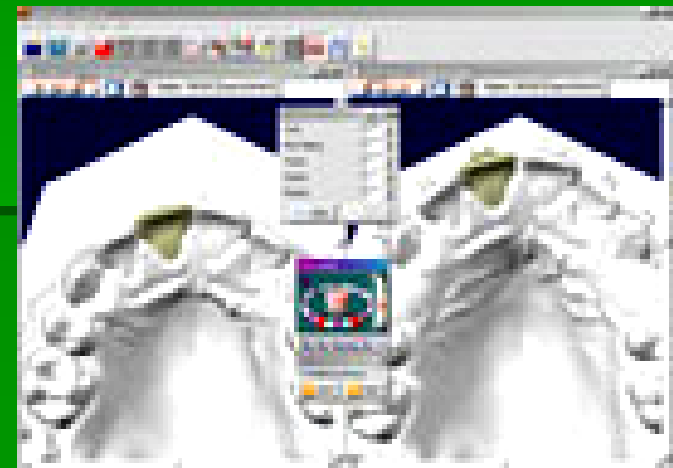
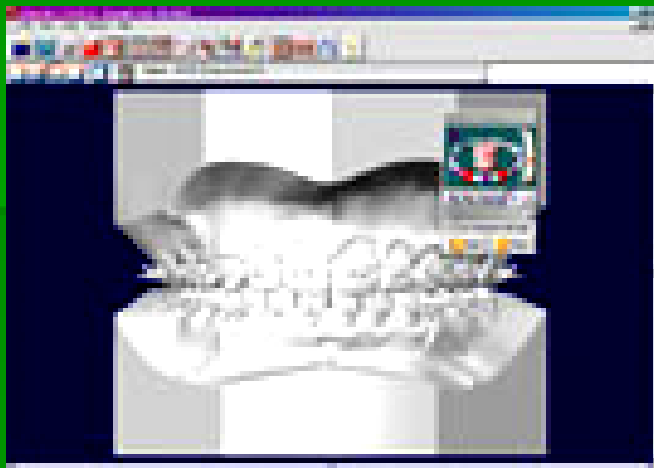
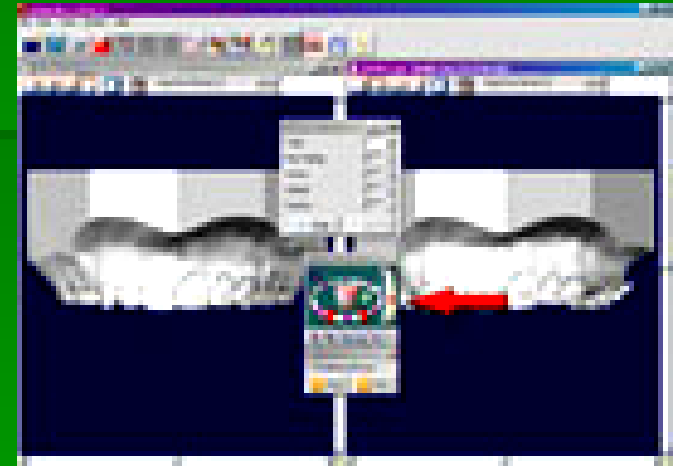
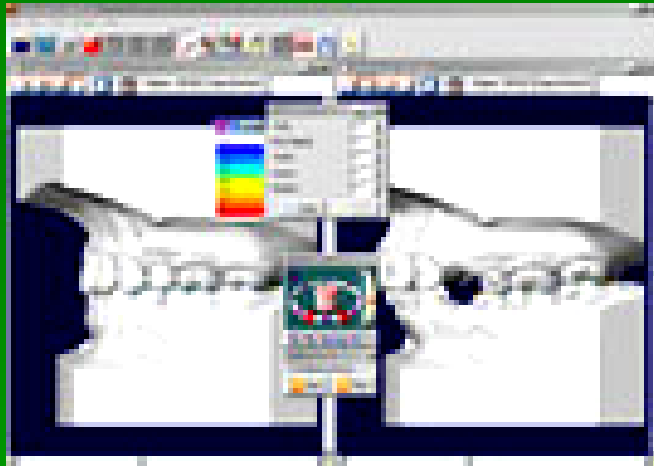
OrthoCAD Digital Study Models:

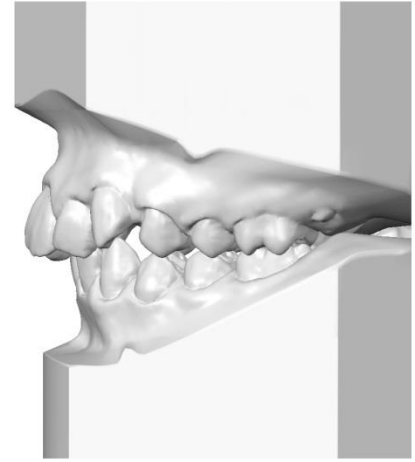
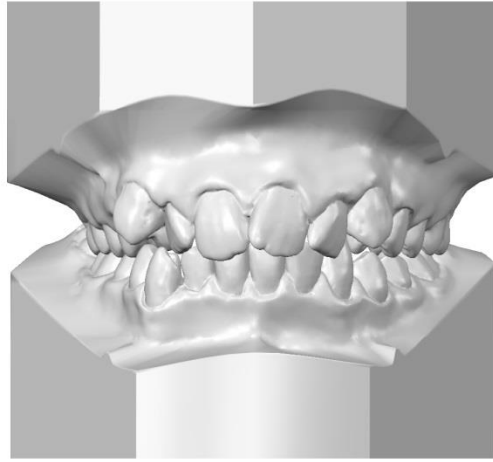
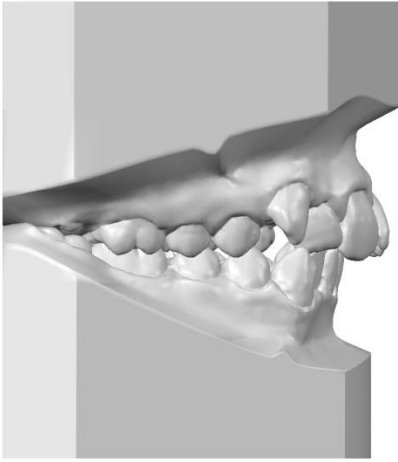
- With OrthoCAD Digital Study Models, you can easily store, retrieve, and communicate cases electronically, dispensing with the hassles associated with plaster casts. All files are instantly at fingertips—24-hours-a-day, no matter where you are.



Digital Modeling: Benefits

- **Storage** – Information is stored electronically, freeing up valuable office space.
- **Quality** – Accepted for certification purposes.
- **Affordable** – No upfront investment is required. Simply pay as you go.
- **Retrieval** – Files are accessed instantly, saving valuable time.
- **Diagnostics** – A set of user-friendly diagnostic tools, enabling better-informed clinical decisions.
- **Communication** – 3-D data can be printed, faxed or e-mailed effortlessly.
- **Convenience** – Use the same alginates, wax bites, trays and office procedures.
- **Access** – Retrieve digital models in home, office, or while on the road.
- **Backup** – Copies are kept in service center for a period of ten years.
- **Marketing** – Show patients that the office is at the forefront of technology.





e-Model



Study Cast Analysis

- I. Intra-arch Analysis:
- II. Inter-arch Analysis:
- III. Arch Length:
- IV. Width of Arch:
- V. Mixed Dentition Analysis:

I. Intra-arch Analysis:

A. Curve of Spee:

Upper

☐ Normal

☐ Flat

☐ Reverse moderate

☐ Reverse Excessive

Lower

☐ Normal

☐ Flat

☐ Moderate

☐ Excessive

B. Arch Form:

Maxillary ☐ Square ☐ Mandibular
☐ Ovoid ☐
☐ Tapered ☐

C. Teeth Present: _____

Specify _____

D. Individual Tooth Malposition:

E. Dental Age:

II. Inter-arch Analysis:

Anteroposterior relation:

A. Angle's Classification:

☐ Class I

☐ Class III

Class II ☐ division 1

☐ division 2

B. Overjet: mm.

- ☐ Increased ☐ decreased ☐ Edge to edge
☐ Negative (Anterior crossbite)

Vertical relation:

A. Overbite: %

- ☐ Increased ☐ decreased ☐ Edge to edge

B. Openbite: ☐ Anterior ☐ Posterior

Transverse relationship:

A. Posterior crossbite:

☐ Right

☐ Left

B. Incisor midline:

Upper

Lower

☐ Correct ☐

☐ To right ☐

☐ To left ☐

III. Arch Length (perimeter):

A. Maxill. Tooth material: mm.

Available space: mm.

Crowding: mm./ Spacing: mm.

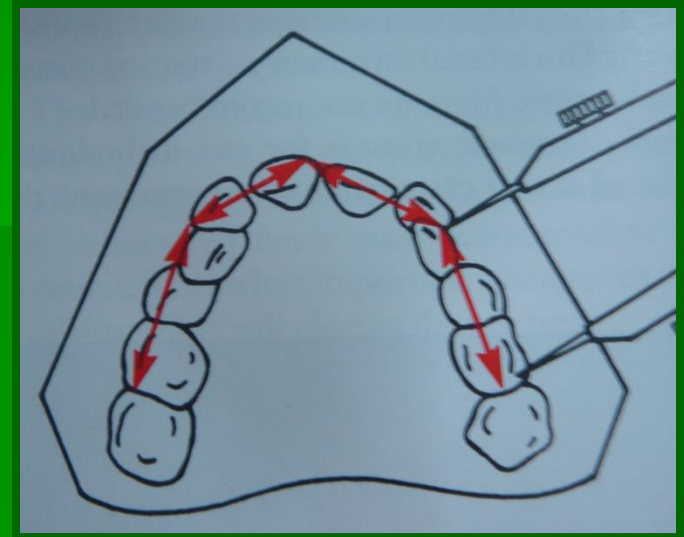
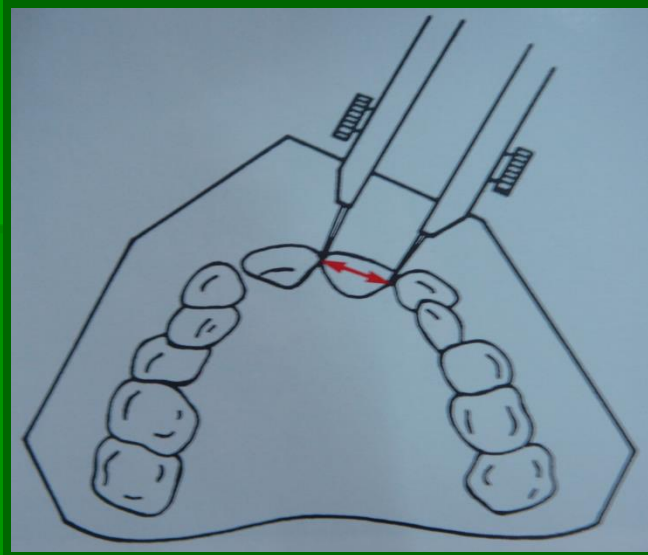
B. Mand. Tooth material: mm.

Available space: mm.

Crowding: mm./ Spacing: mm.

Space Analysis:

Available space - Total teeth size = +Ve means Spacing or
-Ve values (means Crowding)



IV. Width of Arch:

Maxillary

_____mm. Bicanine

_____mm. Bimolar

Mandibular

_____mm.

_____mm.

V. Mixed Dentition Analysis:

A. Space left for 3+4+5 after alignment of the incisors:

Upper arch: __mm. Lower arch: ____mm.

B. Estimated size of 3+4+5 :

Upper arch: __mm. Lower arch: ____ mm.

C. Space left for molar adjustment:

Upper arch: __mm. Lower arch: ____mm.

■ Summary:

This is a Class____malocclusion with ____mm. overjet and ____ overbite. There is ____mm. crowding or / spacing in upper and /or lower arch. The midlines are correct or shifted to Rt. Or Lt. by ____ mm.

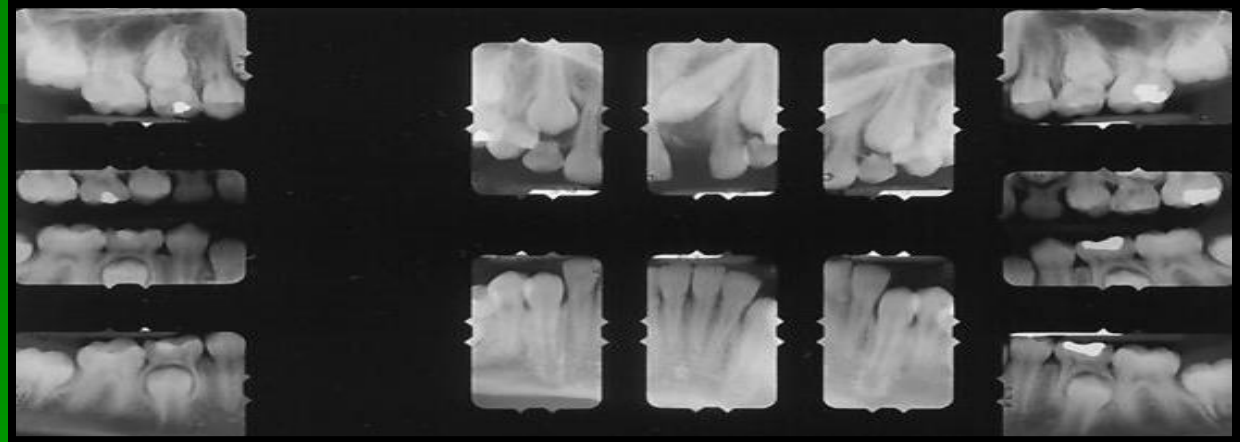
IV. Radiographic Examination

Intra-Oral Radiographs:

Extra-Oral Radiographs:

■ Intra-Oral Radiographs:

- Periapical
- Bite wing
- Occlusal

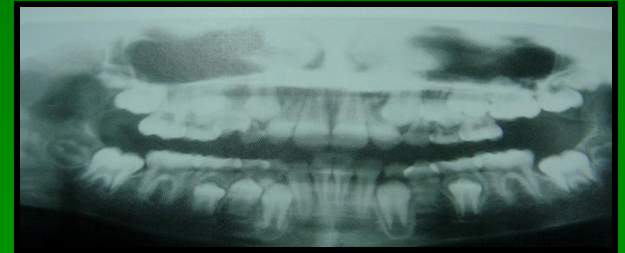


IV. Radiographic Examination

■ Extra-Oral Radiographs:

- Panoramic
- Cephalometric:
 - Lateral Cephalometric
 - P-A Cephalometric

Hand & wrist X-ray



- **Intra-oral radiographs are essential aids for the following reasons:**

1. To determine amount of root length.
2. To determine degree of root resorption and its pattern on primary teeth.
3. To determine pattern of eruption of unerupted permanent teeth.

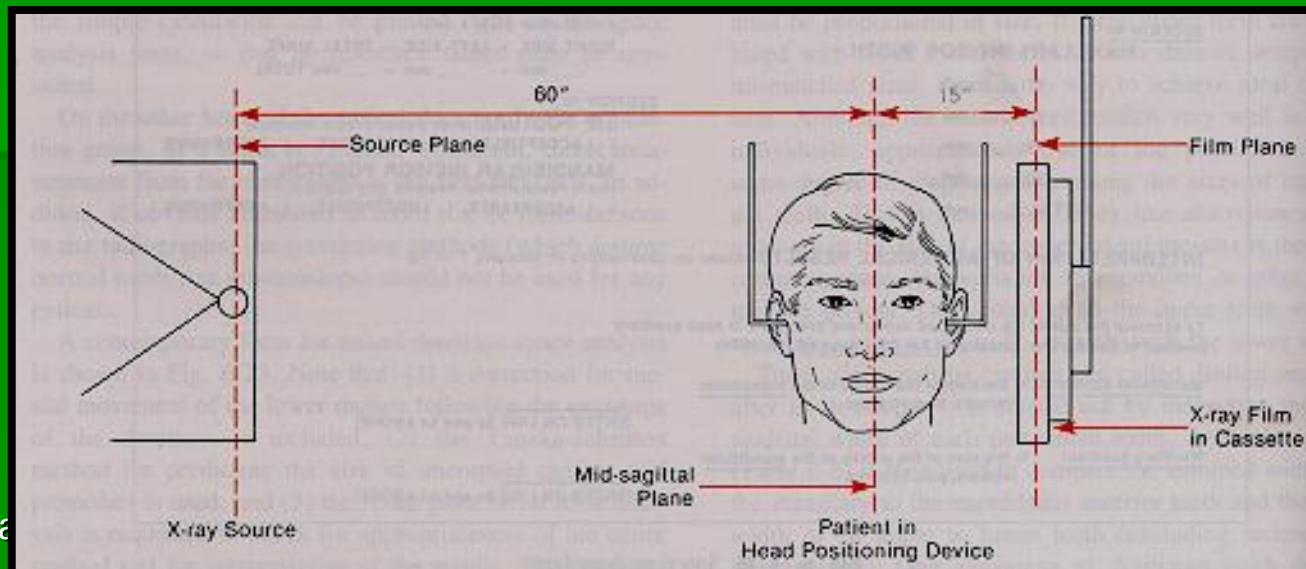
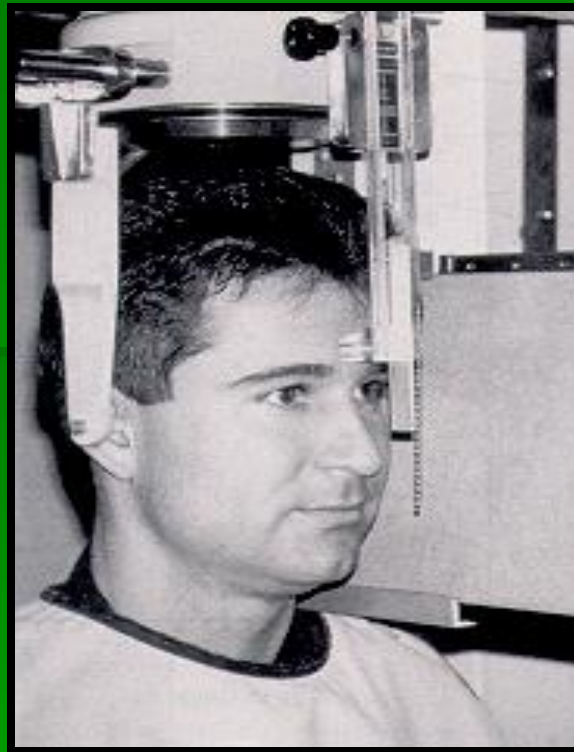
Intra-Oral Radiographs: **Intra-oral radiographs are essential aids for the following reasons:**

4. To ascertain presence of permanent teeth.
5. To study nature of supporting alveolar bone and thickness of periodontal ligament.
6. To determine axial inclination of permanent teeth.
7. To diagnose pathological conditions including caries, periodontal diseases.

Cephalometric Radiography

- *Cephalogram* is standardized radiograph of head and face for the purpose of making head measurements. Standardization is accomplished by means of head holder (Cephalostat) by Two ear rods inserted into external auditory meatus and one nasal rod fixed into junction of frontal & nasal bones on midline (Soft tissue Nasale), and constant distance from central ray of the X-ray source and midsagittal plane of the patient (60 Inches).

Cephalostat



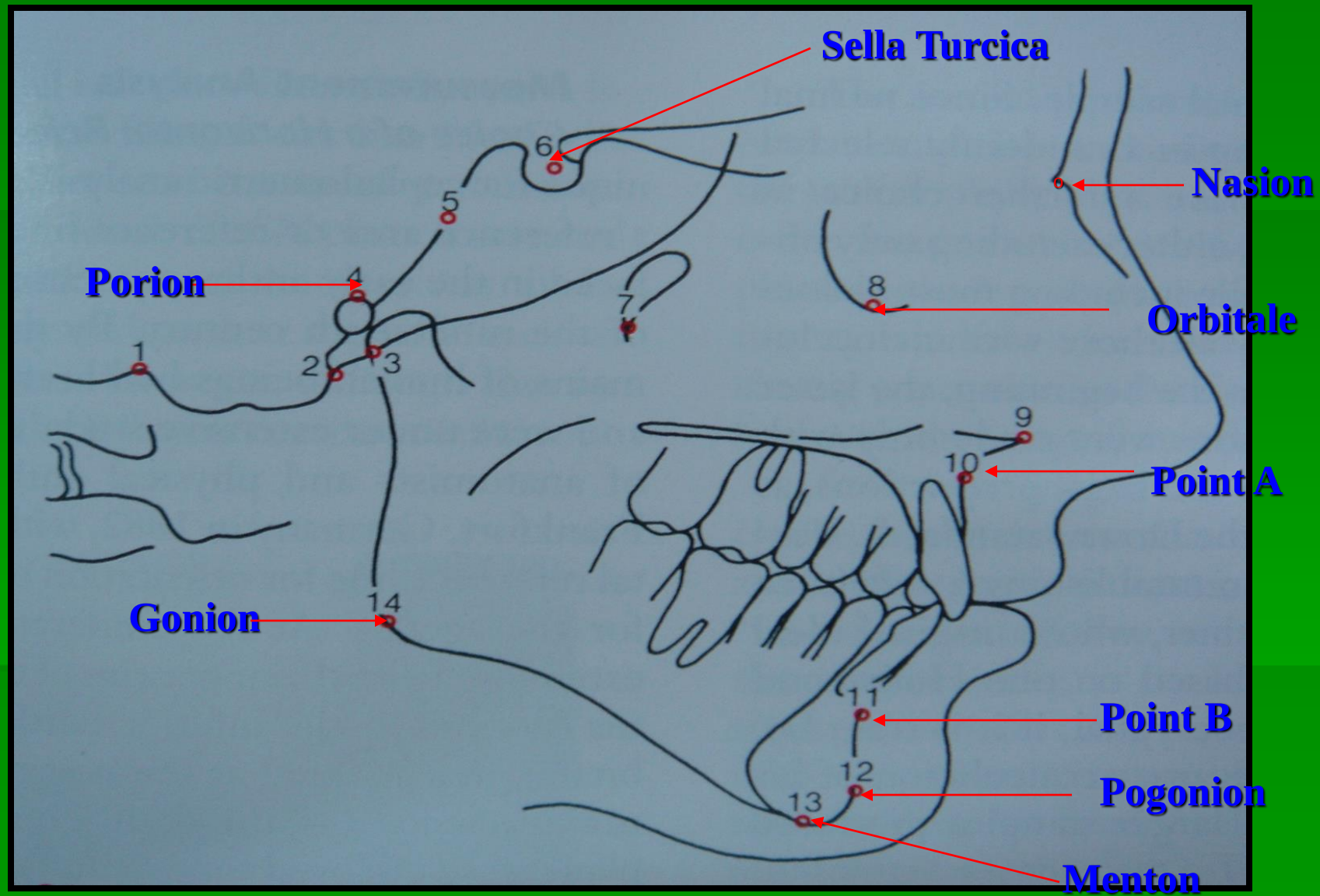
■ Cephalometric Landmarks:

Nasion (N): most anterior point of the suture between frontal and nasal bones.

Sella Turcica (S): center of sella turcica

Orbitale (Or): Lowest point on the infraorbital margin

Porion (Po): Highest point on upper margin of external auditory meatus



Cephalometric Landmarks:

Pogonion (Pog): The most anterior point on bony chin of the mandible

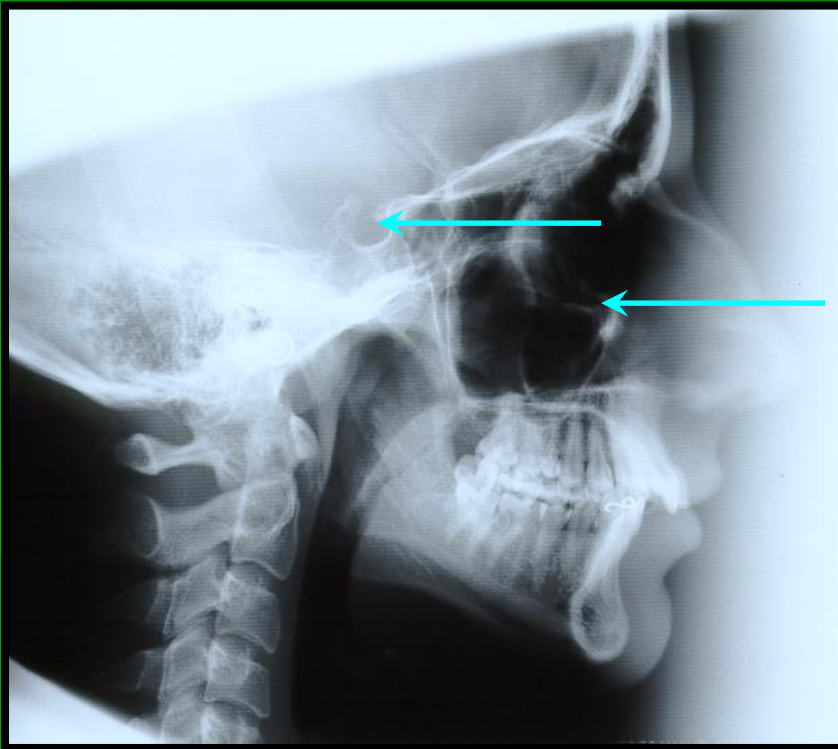
Gonion (Go): The most posterior and inferior point on the angle of the mandible

Point A (Subspinale): The deepest point in midline between anterior nasal spine and alveolar crest of the maxilla

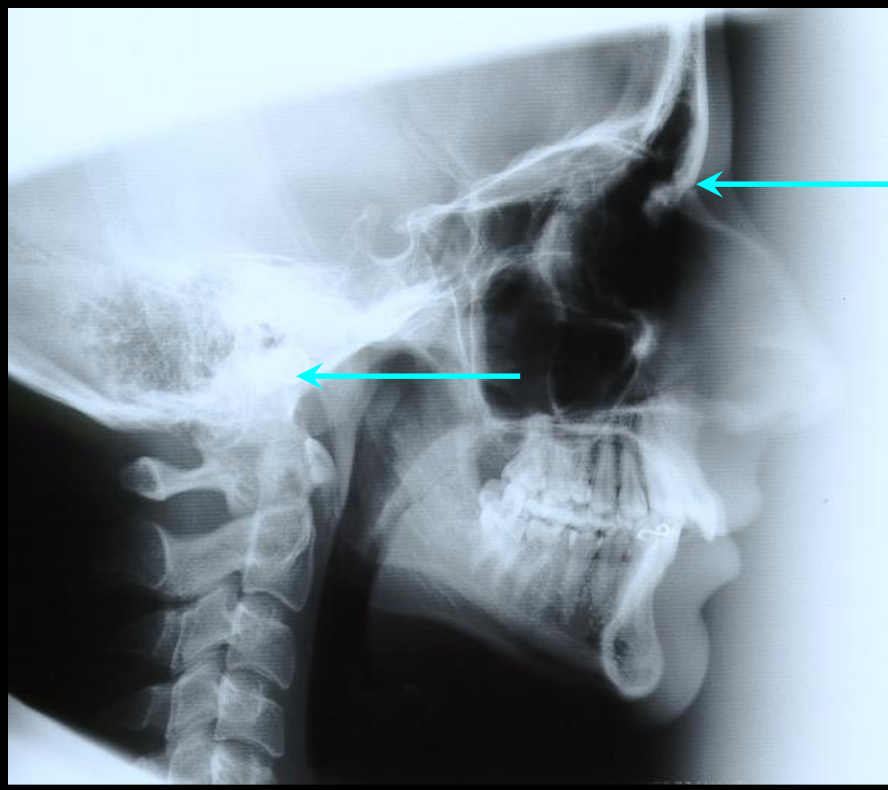
Point B (Supramentale): The deepest point in midline between alveolar crest of the mandible and pogonion

Menton (Me): The lowest point on cross section of the mandibular symphysis

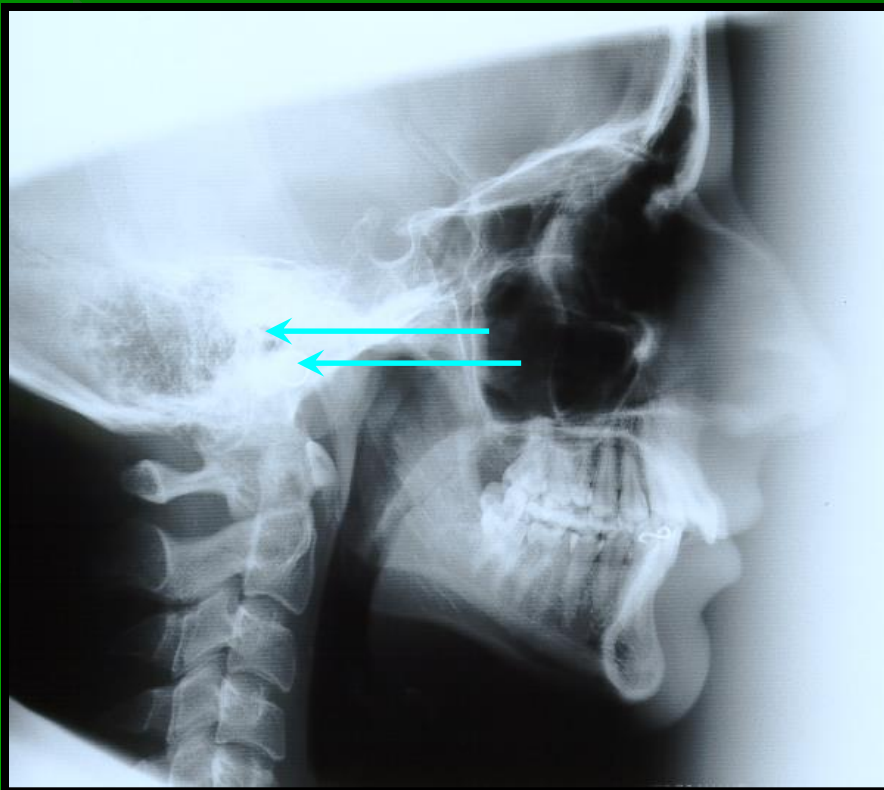
Landmarks



- Sella Turcica (S): midpoint of the pituitary fossa
- Orbitale (**O_r**): lowest point on lower margin of orbit

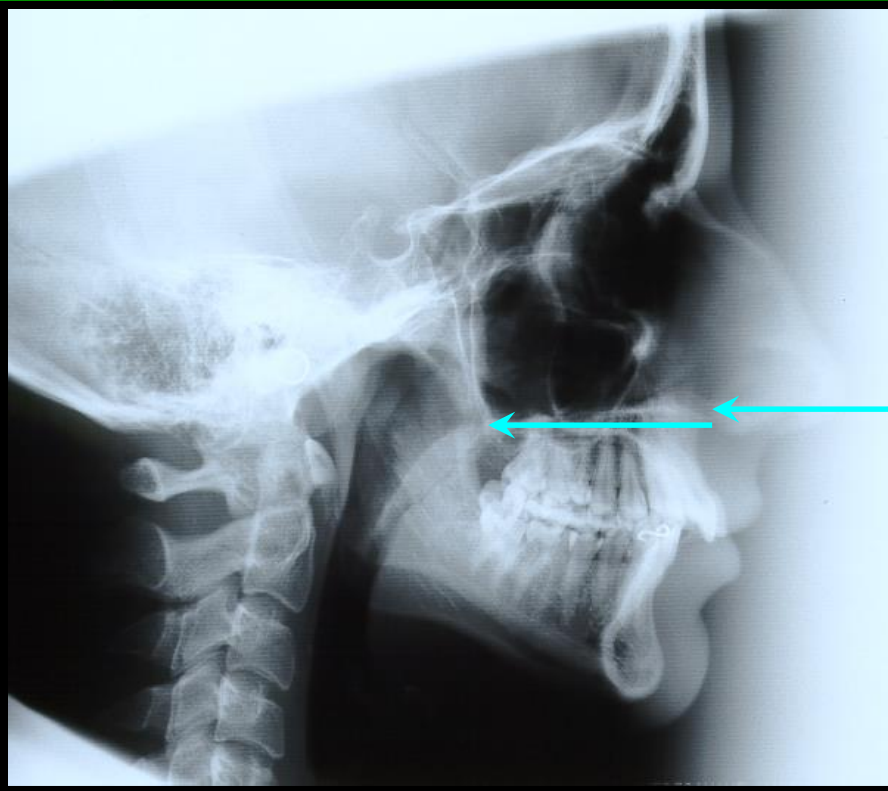


- Nasion (N): junction of nasal and frontal bones
- Basion (Ba): anterior margin of foramen magnum

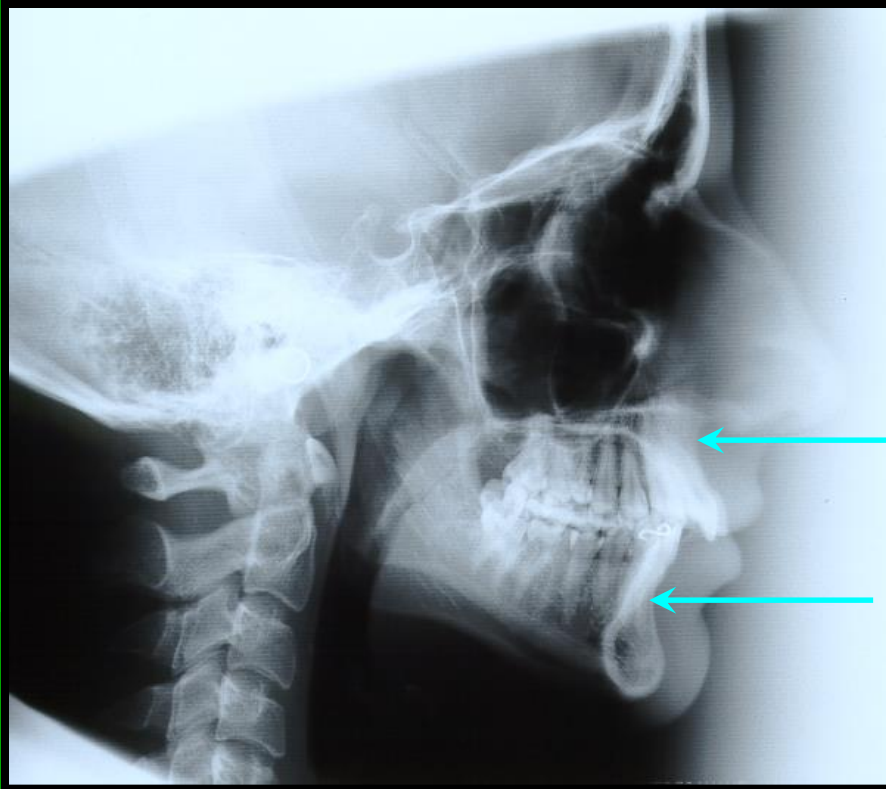


- Porion (Po): superior point of external auditory meatus
- Machine Porion: landmark created by ear post of cephalostat

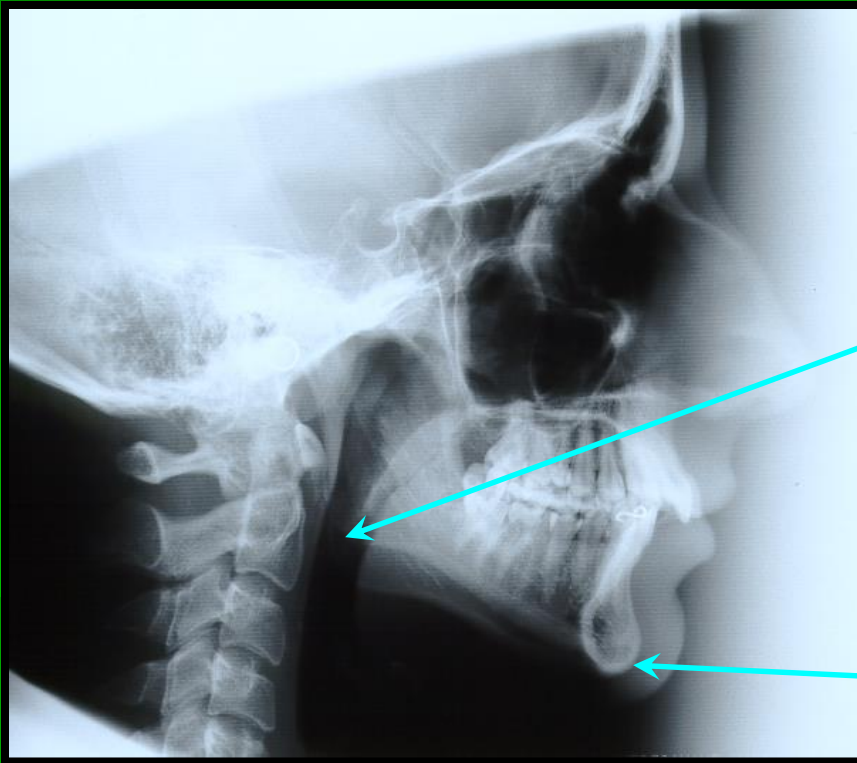
Note: anatomic porion is commonly used in ceph analysis



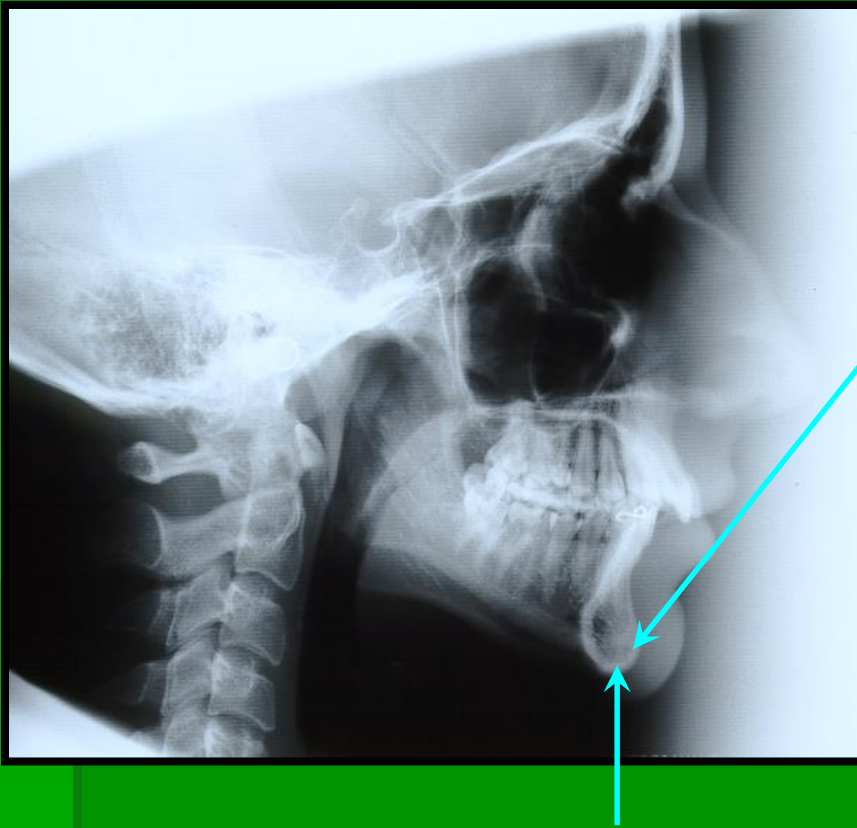
- Anterior Nasal Spine (ANS): tip of anterior nasal spine of maxilla
- Posterior Nasal Spine (PNS): tip of posterior spine of palatine bone



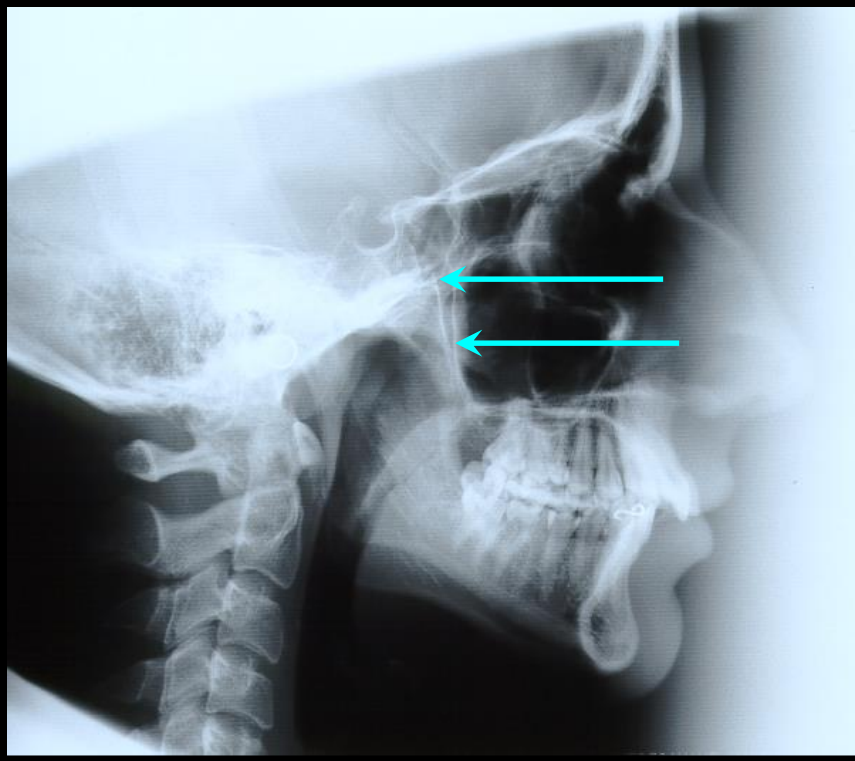
- A point: most concave portion of premaxilla
- B point: most concave portion of symphysis



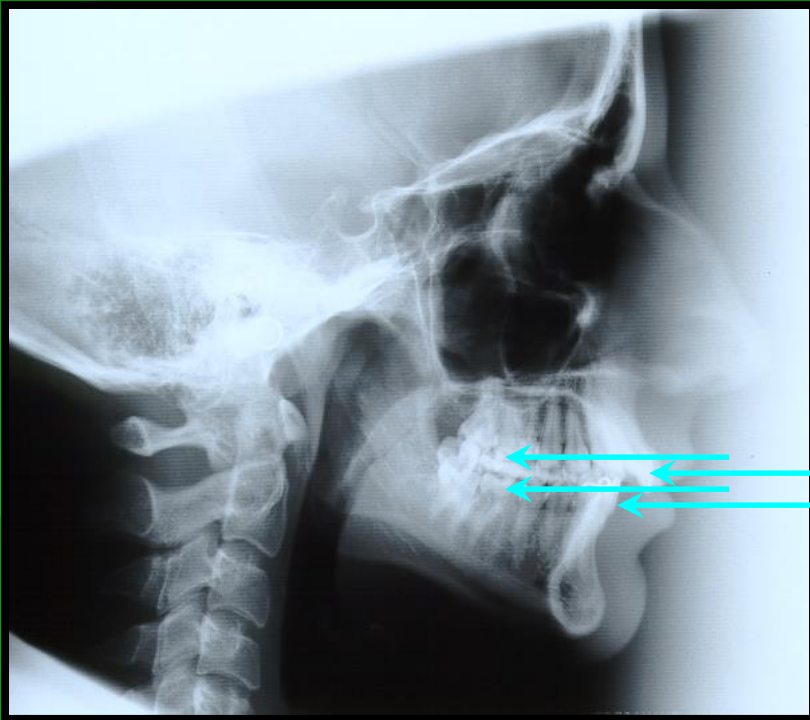
- Gonion (Go):
most inferior posterior
portion of the angle of
the mandible
- Gnathion (Gn):
most anterior inferior
portion of symphysis



- Pogonion (Pog):
most anterior portion
of symphysis
- Menton (M):
lowermost portion
of symphysis

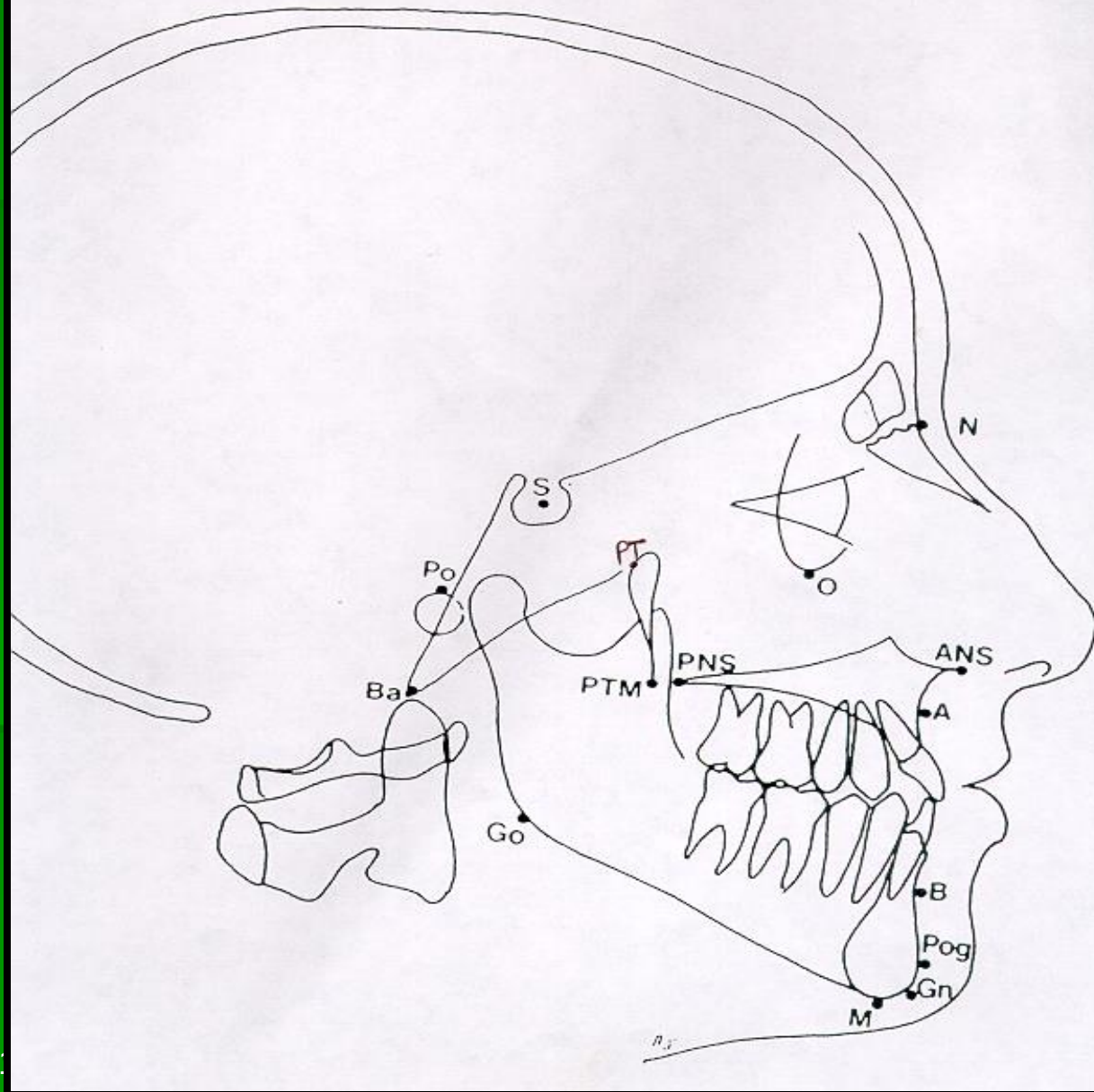


- PT point: the most posterior-superior point on the pterygomaxillary fissure
- PTM: the point at the base of the pterygomaxillary fissure where the anterior and posterior walls meet



- 1: most anterior upper central incisor
- 1: most anterior lower central incisor
- 6: upper permanent first molar
- 6: lower permanent first molar

CEPHALOMETRIC LANDMARKS

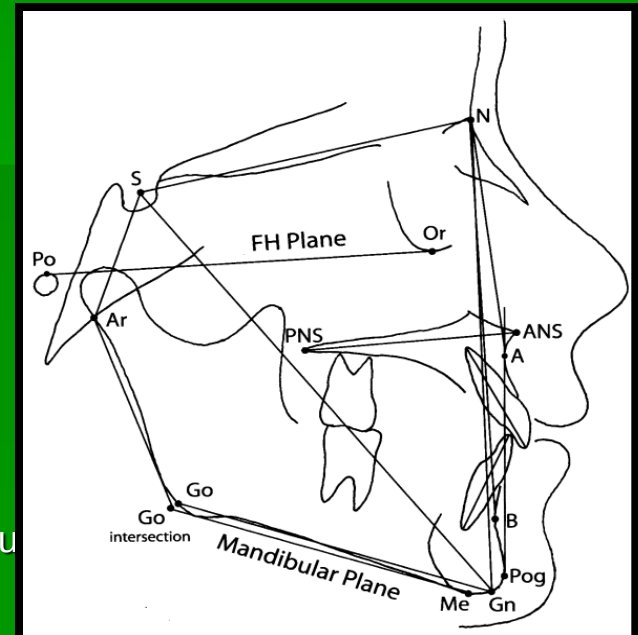


- Cephalometric Planes used in cephalometric analysis:

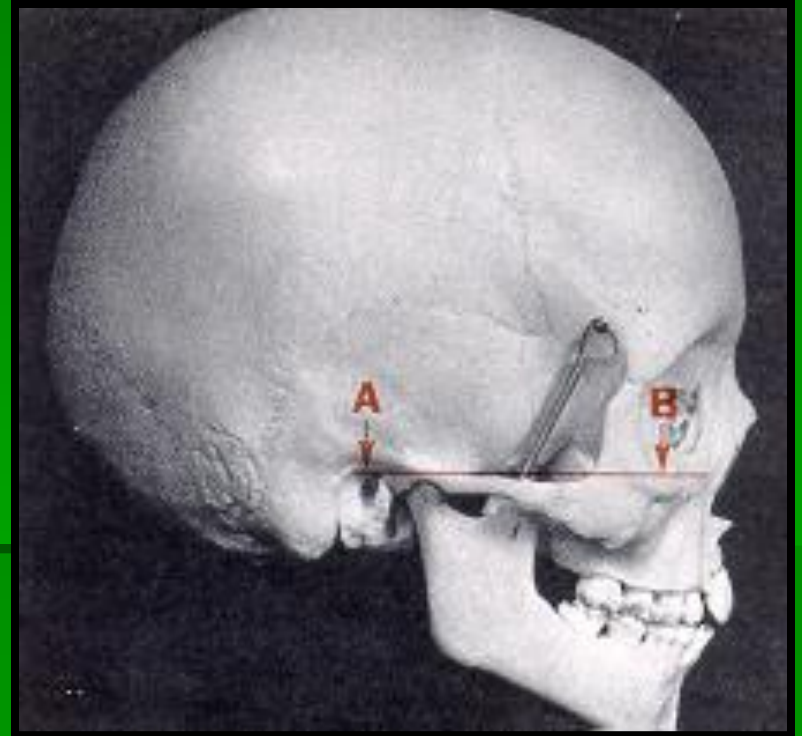
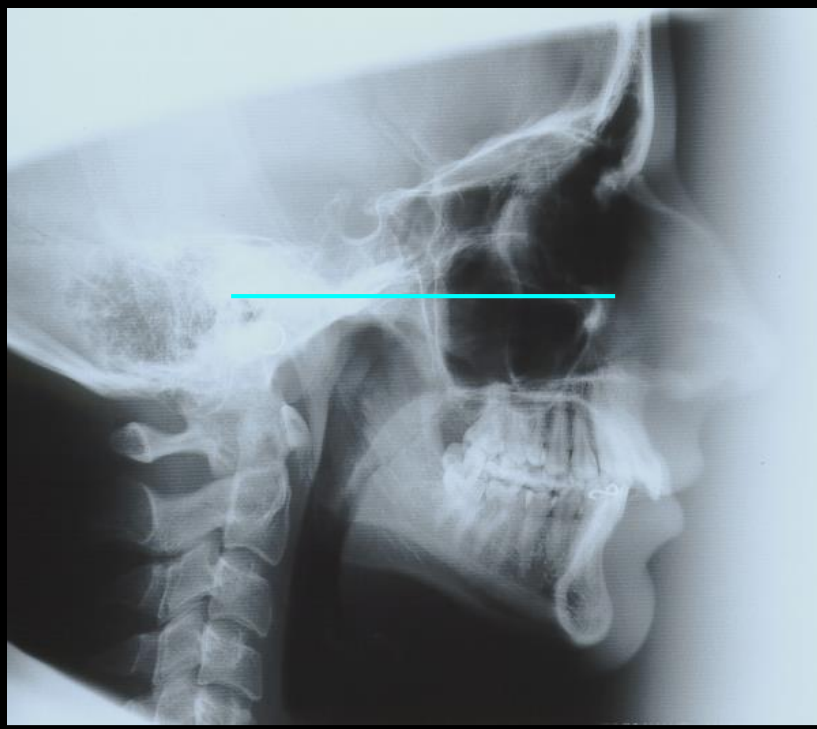
Frankfort Horizontal plane (FH): It passes from orbitale and Porion

Mandibular plane (Md): passes from menton to gonion.

Facial plane (N-Pog): passes from nasion to pogonion

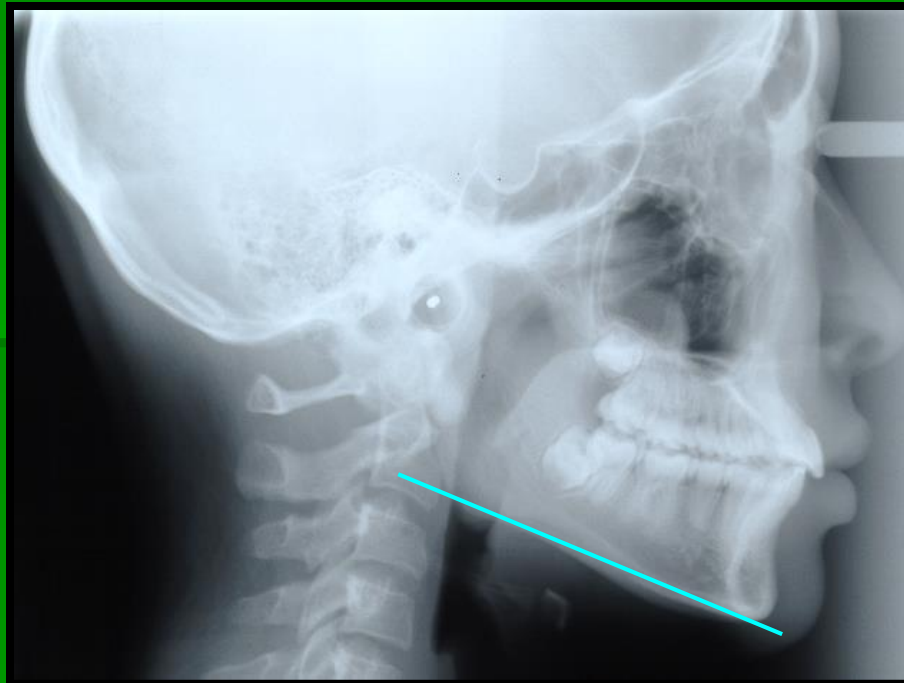


Frankfort Horizontal Plane

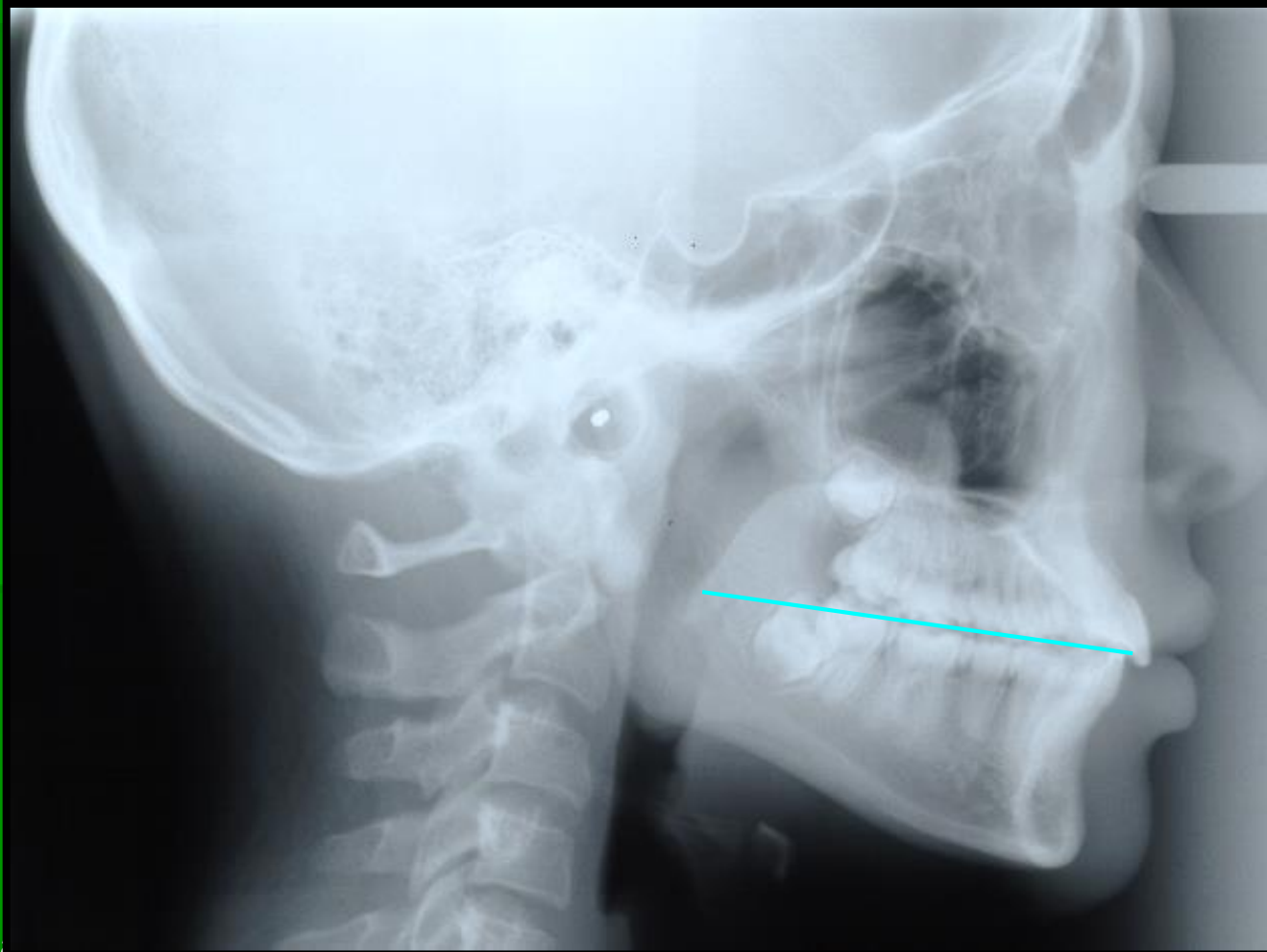


Mandibular Plane

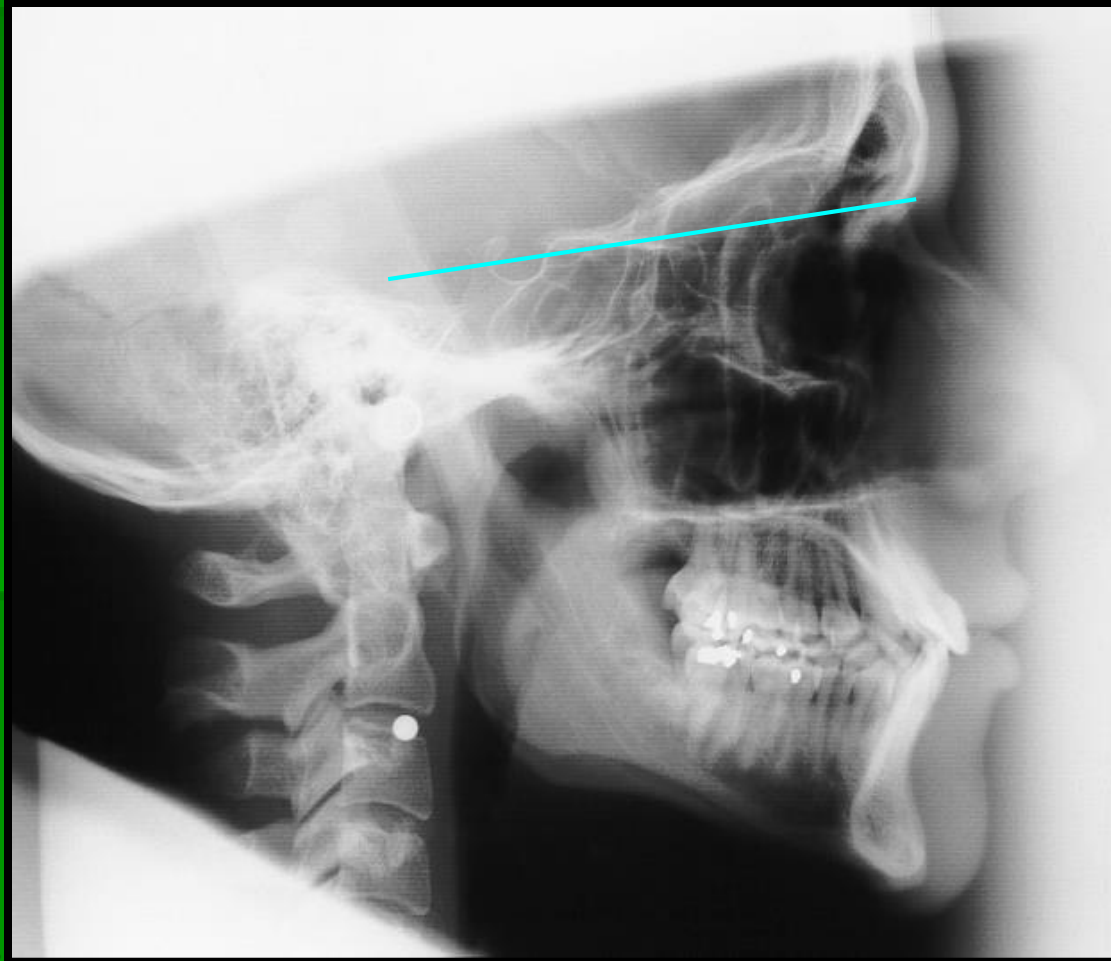
- Line drawn from Gnathion (Gn) to Gonion (Go)



Occlusal Plane

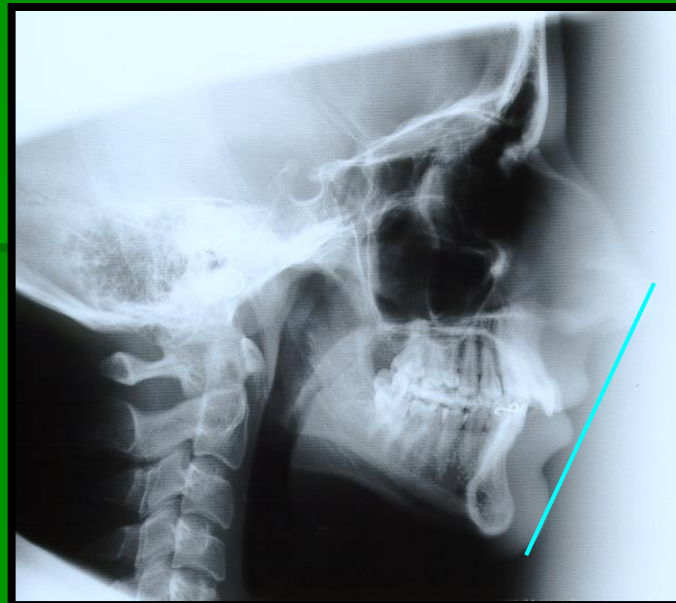


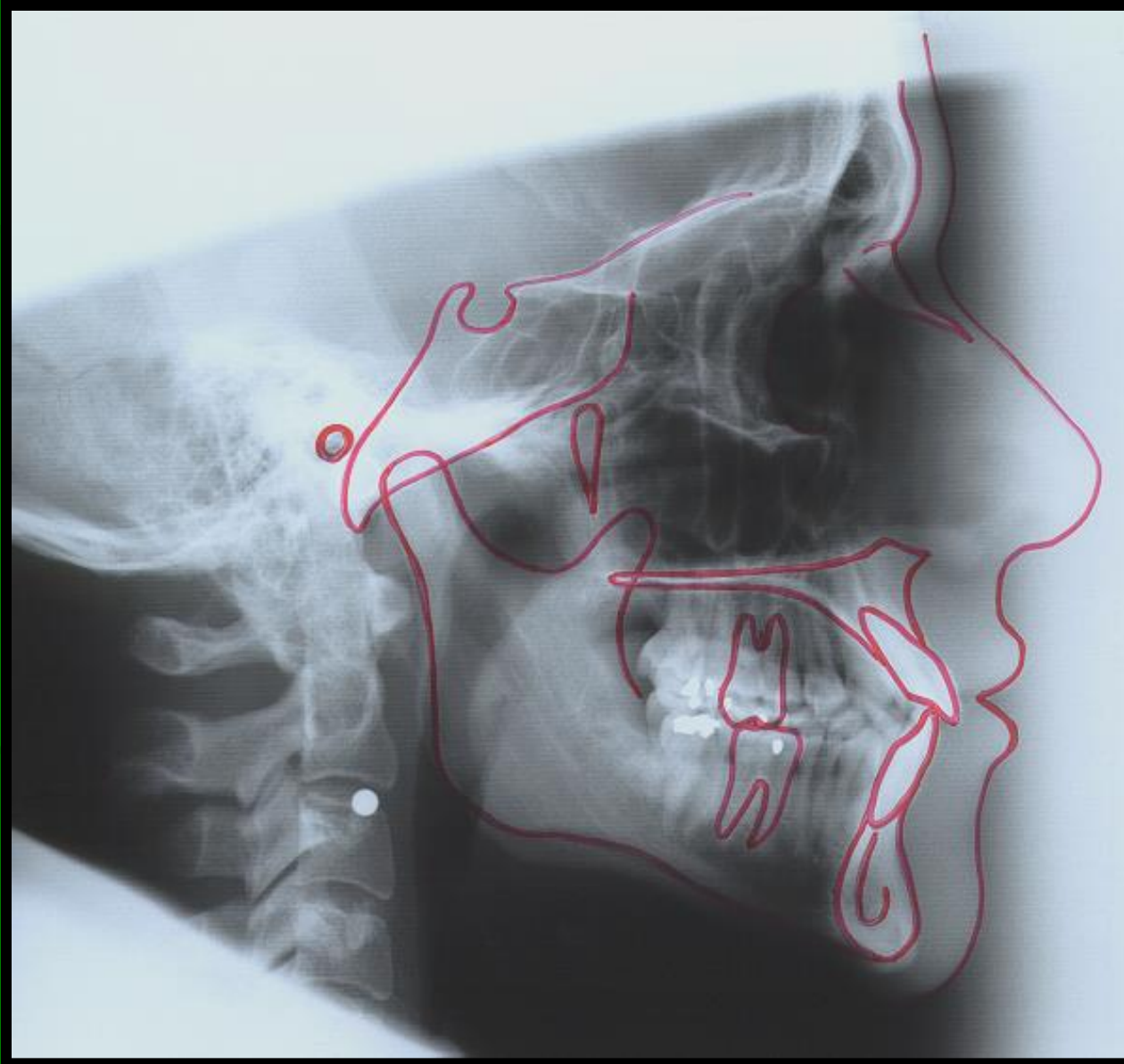
Sella-Nasion Plane (SN)



Esthetic Plane (E-plane)

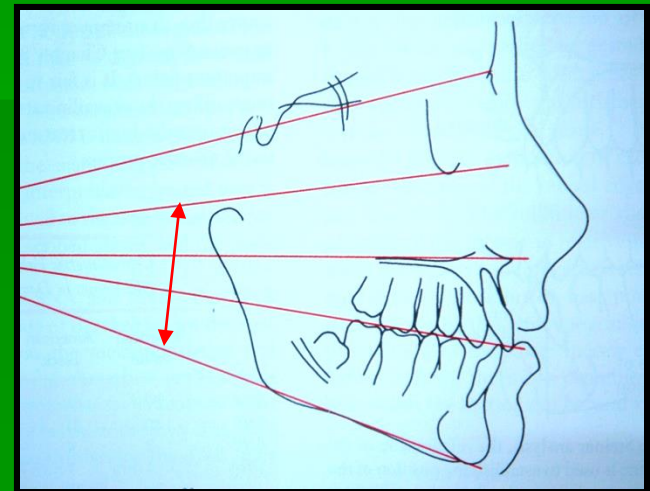
- Tip of nose to tip of soft tissue chin
- Lower lip should fall 0-4 mm behind line





■ Cephalometric Angles used in cephalometric analysis:

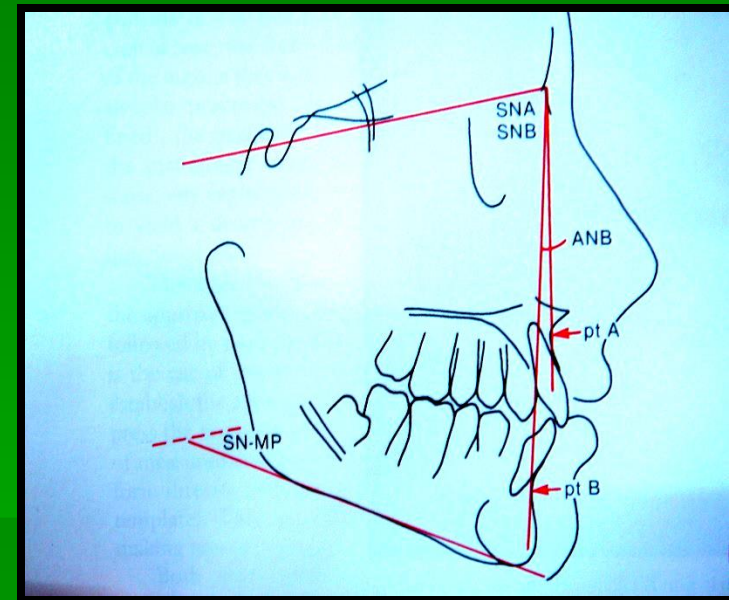
FH-Md plane angle: vary between 17-28 degrees in normal occlusion cases, and may vary from 9-40.5 degrees in all cases. As angle increases, the ascending ramus and length of the face increases.



SNA, SNB, and ANB angles:

Average for SNA angle is 82, for SNB angle 80 degrees, and the mean for ANB difference 2

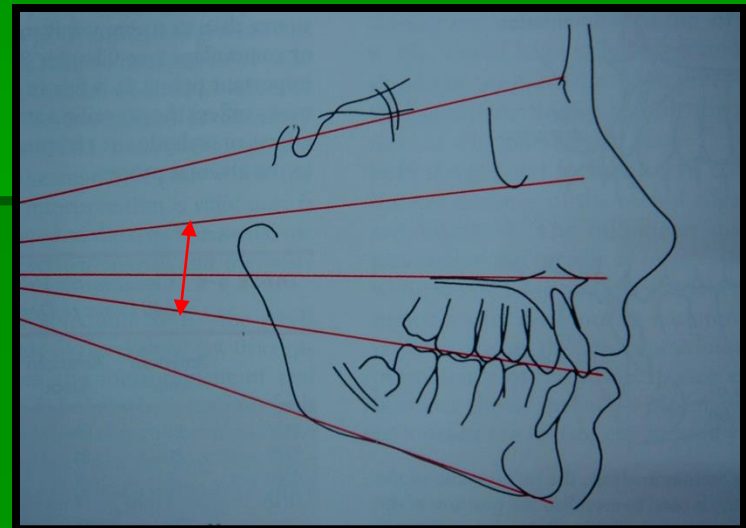
In Class II ANB may reach to 12 degrees, while in Class III ANB angle less than 2 and may be even negative value.



Cephalometric Angles used in cephalometric analysis:

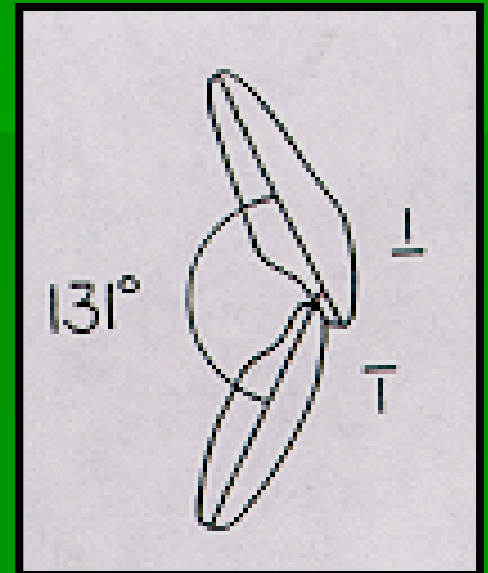
Occlusal – FH plane angle: vary from 14 to 1.5 degrees, usually greater in Class II and smaller in Class III.

(Occl. Plane is taken as a straight line connecting the bisection of both first molar cusp height and incisor overbite)



Cephalometric Angles used in cephalometric analysis:

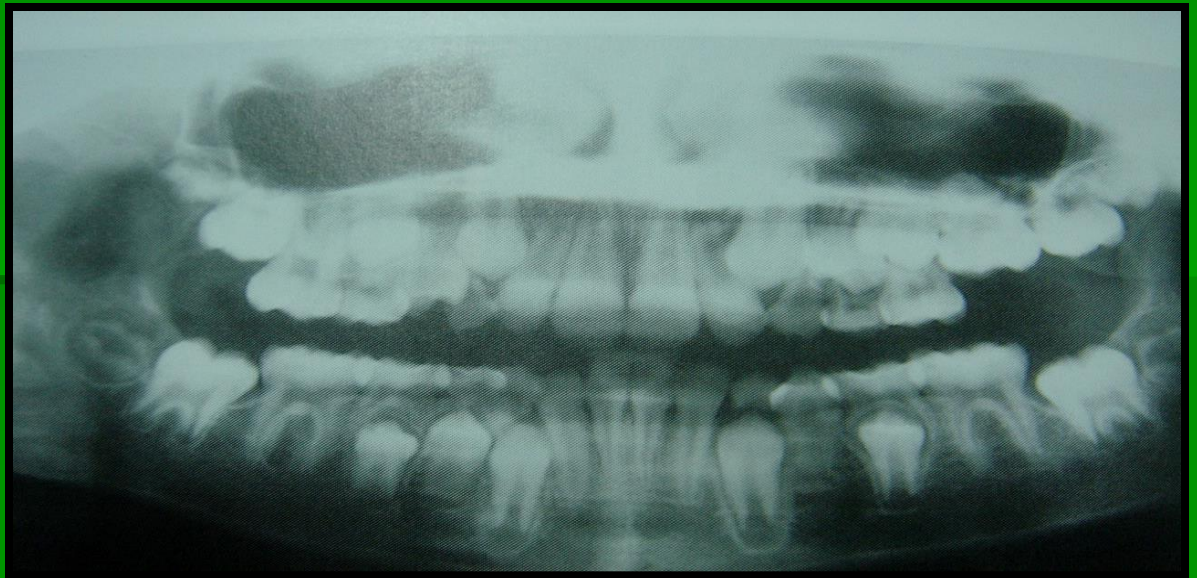
Inter-incisal angle: measured by continuing their long axes through the crown until these lines meet at an angle which can be used as indication of their prominences. Usually vary between 130-150 degrees



- **Value of Cephalometrics in Orthodontic diagnosis:**
 1. Skeletal pattern of patient including cranial base, maxilla and mandible
 2. Soft tissue morphology of lips, tongue, soft palate and pharynx
 3. Serial head plates to study growth and treatment changes
 4. Relationship of the teeth to each other and to bones of the skull.

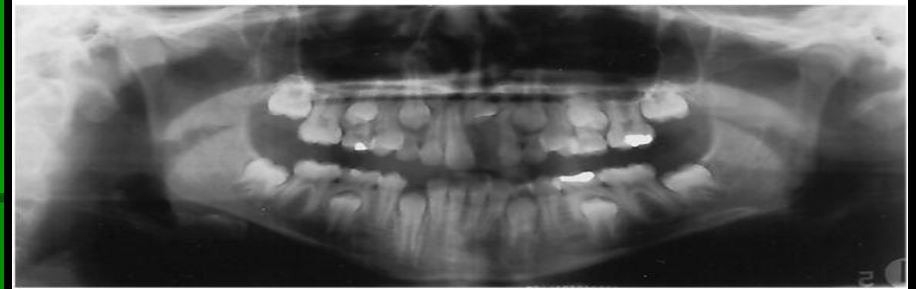
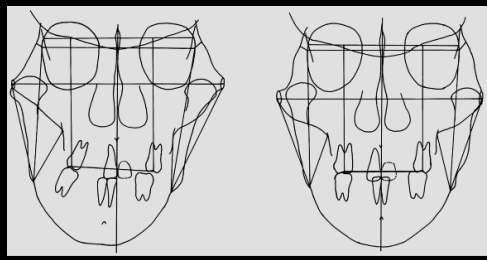
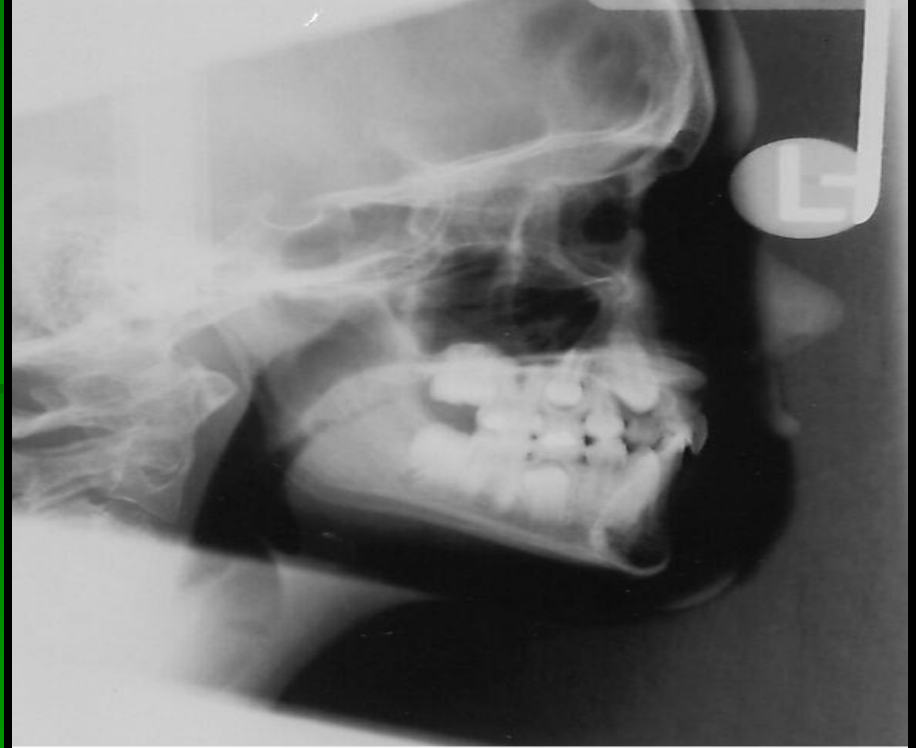
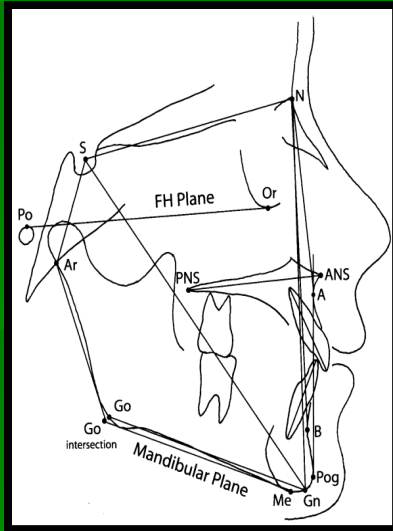
- **Panoramic X-ray:**

Provides larger field of dentition, alveolar bone, basal bones and the condyles in one view, with less co-operation (avoid discomfort of the intra-oral films).



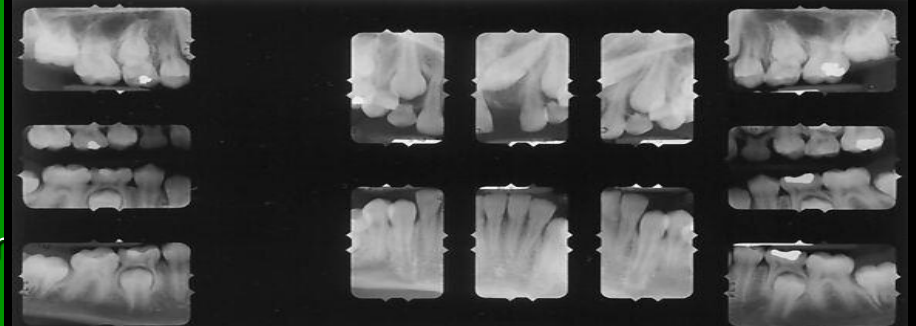
- **Hand and wrist X-ray:** usually left hand & wrist x-ray gives diagnostic criteria for skeletal age by observing degree of calcification of ossification centers of the hand and fusion of the epiphysis.





F

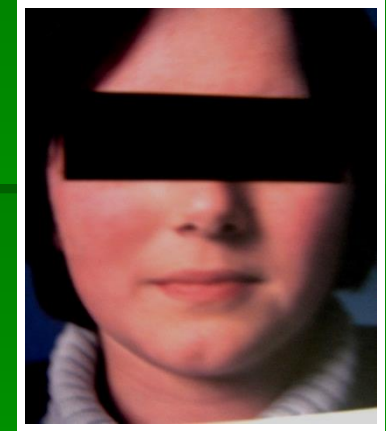
Dr. Ahr



V. Facial Photographs

■ *Extra-Oral Photos:*

- *Lateral view*
- *Frontal view*



■ *Intra-Oral Photos:*

- *Right side*
- *Left side*
- *Frontal view*
- *Upper arch*
- *Lower arch*



Clinical Cases

Case 1: This 20 years old female presented with a ***Class I*** moderately crowded malocclusion and a 70% anterior deep bite.



Case 2: This 13 years old male *Class I* presented with severe upper crowding and a full tooth overbite. The upper first bicusps were removed.



Case 3: This 23 years old female presented with a severely crowded *Class I* malocclusion.



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Case 4: This 11 years old female presented with a ***Class II div. 1*** moderately crowded malocclusion with 8 mm of excess overjet.



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Case 5: This 24 years old male presented with severely crowded arches and a tendency toward a *Class III* malocclusion with cross bites.



Orthodontic Examination and Diagnosis

- Definitions:

- I. History:

Personal history:

Chief Complain:

Past History:

Past medical history:

Past dental history:

II. Clinical examination:

General Examination:

Extra-Oral Examination:

Intra-Oral Examination:

III. Study Casts:

Study Cast Analysis

- I. Intra-arch Analysis:
- II. Inter-arch Analysis:
- III. Arch Length:
- IV. Width of Arch:
- V. Mixed Dentition Analysis:

IV. Radiographic Examination

Intra-Oral Radiographs:

Extra-Oral Radiographs:

V. Facial Photographs

Thank You

